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# **System Interface Control Plan for the Earth Science Data and Information System (ESDIS) Project**

September 1995



National Aeronautics and  
Space Administration

Goddard Space Flight Center  
Greenbelt, Maryland

505-10-20

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**Approved by:**

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Dan DeVito, Systems Engineering Manager      Date  
System Management Office

**Approved by:**

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Ellen Herring, Chief      Date  
System Management Office

**Approved by:**

---

John Dalton, Deputy Associate Director      Date  
ESDIS Project

**Goddard Space Flight Center**  
Greenbelt, Maryland

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## Preface

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This document is under ESDIS project configuration control. Changes to this document will be made by document change notice (DCN) or by complete revision.

Questions on proposed changes concerning this plan should be addressed to:

Earth Science Data and Information System (ESDIS) Project  
Configuration Management Office  
Code 505  
Goddard Space Flight Center  
Greenbelt, Maryland 20771



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## Abstract

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This document is the ESDIS Project's plan for managing the identification, definition, and development of interfaces used for the transfer of data in the Earth Observing System (EOS).

**Keywords:** *ESDIS, Project, Interface Control Plan, ICP*

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### **Appendix C. IRD/ICD Schedule Formats**

### **Abbreviations and Acronyms**

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# Section 1. Introduction

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## 1.1 Purpose

The Earth Science Data and Information System (ESDIS) Project is responsible for managing the design, development, and operation of the Earth Observing System (EOS) Data and Information System (EOSDIS). This document is the ESDIS plan for controlling the definition and development of interfaces used for the transfer of data and operations information among all these activities. The Interface Control Plan (ICP) provides the methodology for facilitating the preparation and approval of interface documents. It will be updated as needed.

The ESDIS project comprises many individual projects and contractual efforts and serves other projects within the EOS mission.

## 1.2 System Overview

EOS is composed of the following:

- EOS AM mission series
- EOS PM mission series
- EOS Special Flights missions series
- EOS Chemistry missions series
- EOS Science
- EOSDIS

EOSDIS conducts the mission series operations; receives and archives the instrument and spacecraft data; provides facilities and system capabilities to the investigators for processing, storing, advertising, and distributing instrument data; and provides electronic library services for easy and rapid access to raw data and processed data. EOSDIS investigators include environmental researchers, instrument developers, space and Earth scientists, educators, and the general public. EOSDIS is a widely distributed system with client-server-based computer systems. Wide Area Networks (WANs), Local Area Networks (LANs), and Metropolitan Area Networks (MANs) will interconnect the computer systems, data sources, and data recipients.

EOSDIS is a system that will evolve over time and is based on existing discipline-specific Earth science data centers and data systems. Four different versions (numbered 0 through 3) have been defined for EOSDIS, representing successively greater capabilities for handling and managing the data from additional space and ground resources, i.e., spacecrafts, instruments, and other investigations. EOSDIS comprises three major segments: the Flight Operations Segment (FOS), the Science Information Systems Segment (SISS), and the Communications and Systems Management Segment (CSMS).

ESDIS is a project organization of the Goddard Space Flight Center (GSFC), which is leading the implementation effort for EOSDIS. The management team for EOSDIS includes extensive

project staff at GSFC and institutional employees at the Distributed Active Archive Centers (DAACs).

### 1.3 Applicable Documents

1. ECS document 193-208-SE1-001, *Methodology for Definition of External Interfaces for the ECS Project*, September 8, 1994
2. Martin Marietta document 23007586, *Landsat 7 System Interface Control Plan*, October 18, 1993
3. GSFC document 423-10-01-0, *Earth Science Data and Information System (ESDIS) Project Level 2 Requirements Volume 0: Overall ESDIS Project Requirements*, February 18, 1993
4. GSFC document 423-10-01-1, *Earth Science Data and Information System (ESDIS) Project Level 2 Requirements EOSDIS Core System (ECS) Volume 1, Revision A*, January 27, 1993
5. GSFC document 423-35-01, *EOS Data and Operations System (EDOS) and EOS Communications (Ecom) Requirements (ESDIS Level 2 Requirements Volume 2 through Change 20)*, April 14, 1994
6. GSFC document 423-10-01-5, *Earth Science Data and Information System (ESDIS) Project Level 2 Requirements Volume 5, EOSDIS Version 0*, January 25, 1993
7. GSFC document number TBD, *ESDIS Configuration Management Plan*, date TBD
8. GSFC document number TBD, *ESDIS Requirements Management Plan*, date TBD
9. GSFC document number TBD, *ESDIS Management Plan*, date TBD
10. IV&V document 0301, *EOSDIS Independent Verification and Validation (IV&V) Management Plan*, December 2, 1994
11. IV&V document 0302, *Independent Verification and Validation (IV&V) Plan*, December 15, 1994
12. IV&V document 1102, *EGS System Integration and Test Plan*, September 1, 1995
13. GSFC document GSFC 170-01-01, *Execution Phase Project Plan for Earth Observing System*, September 1993
14. GSFC document 423-41-02, *Functional and Performance Requirements Specification for the EOSDIS Core System, Revision A, Change 2*, September 8, 1994
15. GSFC document 560-EDOS-0202.0001, *Earth Observing System (EOS) Data and Operations System (EDOS) Functional and Performance Specification*, December 18, 1992
16. GSFC document 540-011, *Earth Observing System (EOS) Communications (Ecom) Functional and Performance Specification*, March 1993
17. GSFC document 515-4FRD/0294 (CSC/TR-94/6084), *EOS Test System (ETS) Functional and Performance Requirements*, December 1994



## 1.4 Document Overview

Following this introduction, Section 2 identifies and categorizes EOSDIS interfaces. The planned and existing interface definition documents are identified, along with the responsible producer and applicable participants who will develop each document. The EOSDIS Version for which each document is required is identified.

Section 3 defines the ESDIS interface control process. It presents the roles and responsibilities of organizations and participants, and it describes the process to be used for coordination of interface documents development, as well as the flow of the interface documentation for review and approval.

Section 4 specifies the interface verification process, including the definition of verification requirements, the verification plan and responsibilities, and the process controls.

Appendix A shows the Interface Requirements Document (IRD) annotated outline; Appendix B gives the external Interface Control Document (ICD) outline; and Appendix C displays the schedules and parameters that will be used to track the development progress of each document. A list of Abbreviations and Acronyms is also included.

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## Section 2. ESDIS System Interfaces

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### 2.1 Categories of Interfaces

The EOSDIS is a large system that is physically distributed around the United States and is connected to affiliated facilities in Canada, Japan, and other countries. Interfaces between the U.S. Government and foreign governments, interfaces between the National Aeronautics and Space Administration (NASA) and other agencies in the U.S. or foreign governments, and interfaces between NASA Headquarters and NASA centers are controlled at NASA Headquarters. These interface requirements must be translated into EOS Level 1 requirements by NASA Headquarters for interface development by the ESDIS Project or other projects within EOS. The interfaces that ESDIS controls are those identified in EOS Level 1 requirements and ESDIS Level 2 and Level 3 requirements. Identification and control of interfaces at Level 4 and below are the responsibility of the ESDIS-funded projects or are assigned to institutional systems.

The ESDIS-controlled interfaces of the EOSDIS are categorized as follows:

- ESDIS interfaces with flight projects
- ESDIS interfaces with external organizations
- Interfaces between EOSDIS projects and from contracts
- ESDIS interfaces with NASA institutional systems

The documentation concerning the definition of those interface categories is as follows:

- ***Interproject Agreements (IPAs)***—These documents are agreements between ESDIS and projects not managed by ESDIS. Generally, the projects involved agree on an exchange of support services and data. From the interface control viewpoint, these agreements identify the need for an interface and the scope of the interface.
- ***IRDs***—IRDs define the requirements for data exchanges across an interface between separately managed projects.
- ***ICDs***—ICDs are used to record design agreements between participating organizations. ICDs provide a means to evaluate and control all mutually interdependent and/or interacting design parameters of the interface.
- ***Detailed Mission Requirements (DMRs)***—DMRs contain the results of the requirements identification and derivation activities and provide the basis for system design.
- ***Data Format Control Documents (DFCDs)***—These documents define the formats of data units that are transferred across an interface and the control codes used in the data formats and can be used for separately managed projects.

- ***Commercially Implemented Standards***—These are standard interfaces produced for commercial availability, and they can be specified for interface design control without specifying the detailed design requirements.

## 2.2 Interfaces Subject to ICP Control

Figure 2-1, EOSDIS Data Interfaces Diagram (three pages), shows the interfaces to be controlled and the interface documentation to be developed in accordance with this ICP. Table 2-1, EOSDIS Data Interfaces—IRD and DMR, and Table 2-2, EOSDIS Data Interfaces—ICD and DFCD, list each interface and the parameters associated with developing and controlling the interface definition. Interfaces under ICP control means those that are identified and facilitated by the terms of this plan. Interface documentation called for in this plan is approved by the EOSDIS Configuration Control Board (CCB), and parties to the interface are required to concur. This document will not be revised solely to update these illustrations.

The remainder of this section briefly discusses the interface categories and documents associated with the interfaces.

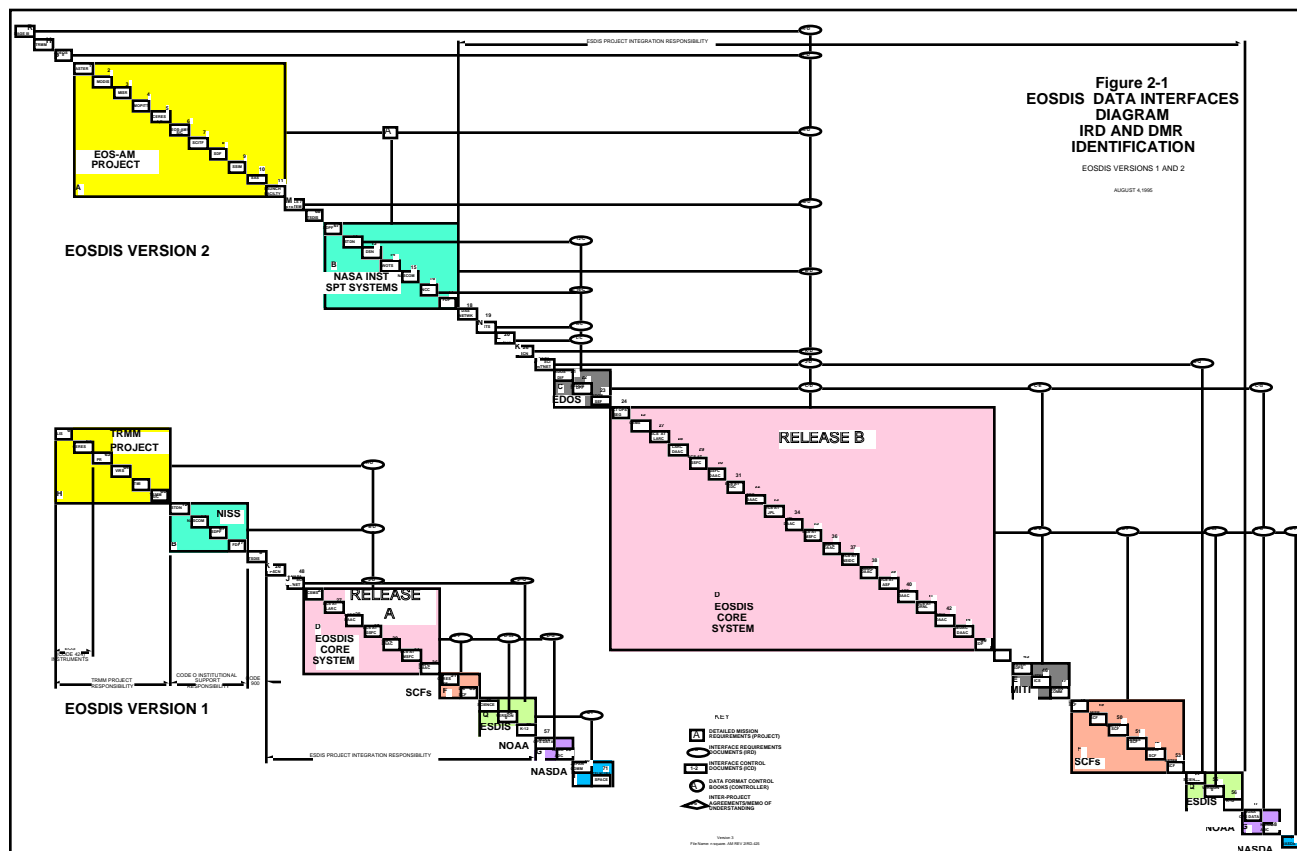
## 2.3 ESDIS Interfaces With Flight Projects

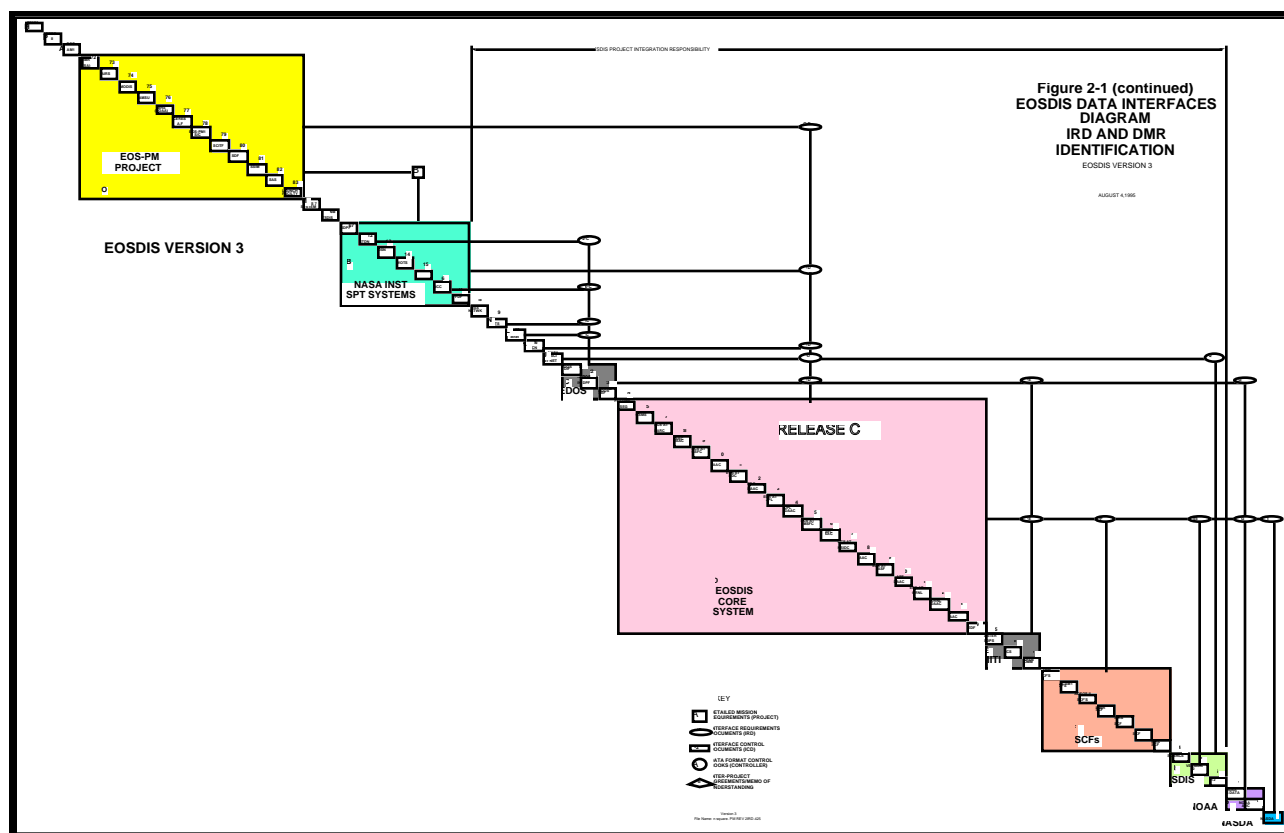
ESDIS provides EOSDIS system capabilities needed by the flight projects to conduct their mission operations, capture and archive Level 0 data, and produce Level 1 data. The flight projects provide project-peculiar databases, software, managers, and experts for implementing the mission operations system using EOSDIS. The interface agreements between ESDIS and each flight project are documented in an IPA or a memorandum of understanding (MOU). The EOS Level 1 requirements contain the requirements for ESDIS to establish interfaces with specific flight projects.

### 2.3.1 TRMM Project

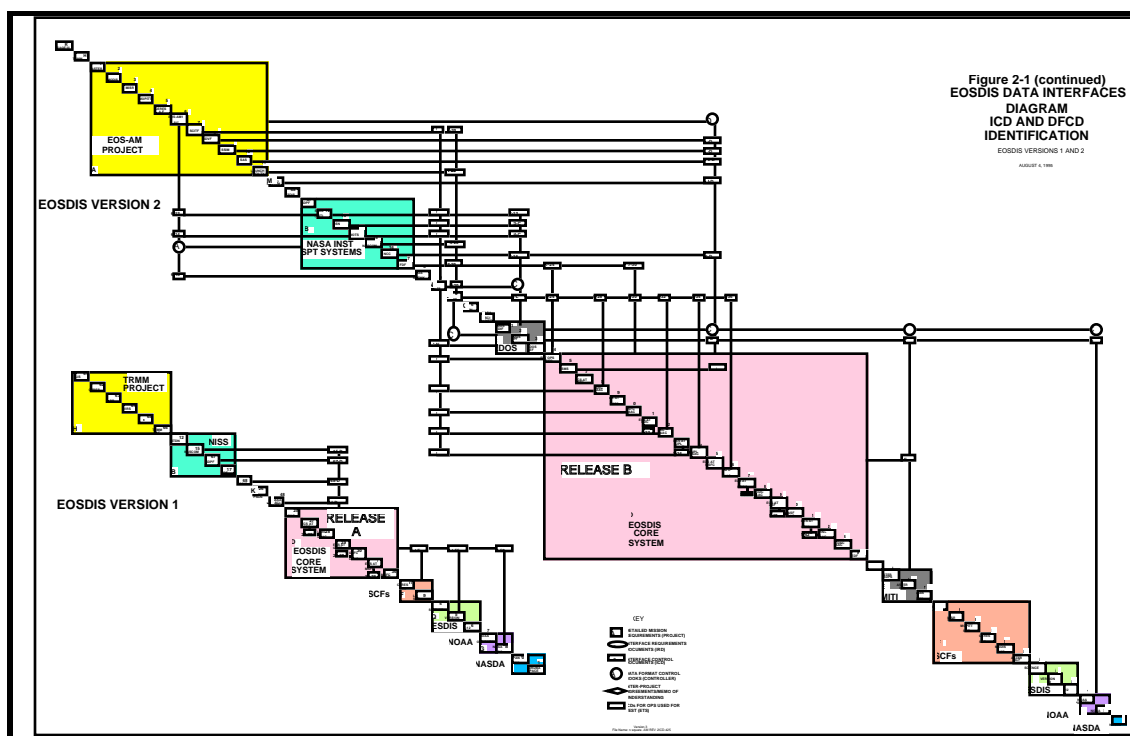
Two EOS instruments will be provided to the Tropical Rainfall Measuring Mission (TRMM) Project as a “flight of opportunity,” the Lightning Imaging Sensor (LIS) and the Cloud and Earth’s Radiant Energy System (CERES). The TRMM Project conducts TRMM mission operations. The data from the two instruments are provided to EOSDIS for transport to the EOSDIS Science Data Processing Segment (SDPS) also called the Science Information Systems Segment which ESDIS provides, and the instruments’ Science Computing Facilities (SCFs). All the TRMM data will be archived in EOSDIS and transported between the archives and the TRMM Project data processors at the TRMM Science and Data Information System (TSDIS) as required. ESDIS will also provide data communications for the transport of TRMM data with Japan. EOSDIS will retrieve and transport data required for TRMM data processing from EOSDIS Version 0 archives (or archives accessible via Version 0) to the TRMM Project’s data processors (TSDIS). EOSDIS will carry advertisements for TRMM data and will distribute the data to requesters.

Interface control documentation consists of IRDs and ICDs (Figure 2-1, Table 2-1, and Table 2-2). The mission requirements response (MRR) and DMR to acquire NASA institutional support services are TRMM Project documents.





**Figure 2-1. EOSDIS Data Interfaces Diagram—IRD Identification (2 of 3)**




**Figure 2-1. EOSDIS Data Interfaces Diagram—IRD Identification (3 of 3)**

**Table 2-1. EOSDIS Data Interfaces—IRD and DMR**

N SQ. NO.	DOCUMENT	PARTIES	ESDIS NO.	COMMENTS
D-55	194-219-SE1-004 IRD BETWEEN THE ECS AND THE VERSION 0 SYSTEM	ECS ESDIS	505-41-11	VERSION 1/2/3 01
D-F	194-219-SE1-005 IRD BETWEEN THE ECS AND SCF'S	ECS ESDIS	505-41-12	VERSION 1/2 02
J-D (B)	194-219-SE1-001 IRD BETWEEN THE ECS AND THE NSI	ECS ESDIS NSI	505-41-17	VERSION 1/2/3 03
D-G	194-219-SE1-019 INTERFACE RQMTS DOCUMENT BETWEEN ECS AND THE NOAA AFFILIATED DATA CENTERS	ECS ESDIS NOAA	505-41-19	VERSION 1/2/3 04
B-D	194-219-SE1-020 IRD BETWEEN THE ECS AND THE NISS	ECS ESDIS	505-41-23	VERSION 1/2/3 05
H-D	194-219-SE1-018 INTERFACE RQMTS DOCUMENT BETWEEN ECS AND THE TRMM GROUND SYSTEM	ECS ESDIS TRMM	505-41-14	VERSION 1 06
D-E	194-219-SE1-002 IRD BETWEEN THE ECS AND MITI ASTER GDS PROJECT	ECS ESDIS MITI	505-41-18	VERSION 2 07
A-D	194-219-SE1-019 INTERFACE RQMTS DOCUMENT BETWEEN ECS AND EOS AM PROJECT FOR AM-1 FLIGHT OPS	ECS ESDIS EOS-AM	505-41-15	VERSION 2 08
M-D	219-CD-003-002 INTERFACE RQMTS DOCUMENT BETWEEN ECS AND THE LANDSAT 7 SYSTEM	ECS ESDIS LANDSAT 7	505-41-13	VERSION 2 09
P-D	194-219-SE1-003 INTERFACE RQMTS DOCUMENT BETWEEN ECS AND THE ADEOS II/SEAWINDS PROJECT	ECS, SEAWINDS, NASDA ESDIS ADEOS II		VERSION 2 10
R-D	TBD IRD BETWEEN ECS AND THE SAGE III PROJECT	SAGE III ESDIS		VERSION 2 11
O-D	194-219-SE1-024 INTERFACE RQMTS DOCUMENT BETWEEN ECS AND THE EOS-PM1	ECS ESDIS EOS PM	505-41-25	VERSION 3 15
K-D (A)	220-CD-001-003 COMMUNICATIONS REQUIREMENTS FOR THE ECS PROJECT	ECS PSCN		VERSION 1/2 19
J-D (A)		NSI		
C-D	560-EDOS-0211.0001 IRD BETWEEN EDOS AND THE EOS GROUND SYSTEM ELEMENTS	EDOS ECS ESDIS	505-41-30	VERSION 2 20
C-E		MITI		
C-G	560-EDOS-0211.0002 IRD BETWEEN EDOS AND THE NETWORK CONTROL CENTER DATA SYSTEM (NCCDS)	NOAA EDOS STDN ESDIS		VERSION 2 21
16-C	560-EDOS-0211.0003 IRD BETWEEN EDOS AND THE TDRSS GROUND TERMINAL (TGT)	EDOS STDN ESDIS		VERSION 2 22
12-C	560-EDOS-0211.0004 IRD BETWEEN EDOS AND THE EOSDIS BACKBONE NETWORK (EBnet)	EDOS EBnet ESDIS	505-41-31	VERSION 2 23
L-C (A)				
N-C	560-EDOS-0211.0009 IRD BETWEEN EDOS AND THE EOSDIS TEST SYSTEM	EDOS ETS		VERSION 2 24
J-Q	NSI IRD TBD ESDIS PROJECT- NSI PROJECT IRD V3 DRAFT	ECS ESDIS NSI		VERSION 1/2/3 27
Q-I	NASA/NASDA NETWORK RQMTS FOR EARTH OBSERVATION MISSIONS	ESDIS NASDA JPL	505-41-32	VERSION 1/2 28
K-D (B)	PSCN IRD TBD IRD BETWEEN THE ECS AND THE PSCN	ECS ESDIS PSCN		VERSION 1/2/3 29
<b>A</b>	DETAILED MISSION RQMTS FOR THE EOS-AM1 SPACECRAFT	EOS-AM PROJECT ESDIS CODE 500		VERSION 2 30
D-I	TBD INTERFACE RQMTS DOCUMENT BETWEEN ECS AND NASDA	ECS NASDA		VERSION 2
<b>B</b>	DETAILED MISSION REQUIREMENTS FOR THE EOS-PM1 SPACECRAFT	EOS-PM PROJECT ESDIS CODE 500		VERSION 3
AUGUST 4, 1995				



**Table 2-2. EOSDIS Data Interfaces—ICD and DFCD (1 of 2)**

N SQ. NO.	DOCUMENT	PARTIES	ESDIS NO.	COMMENTS
D-55	209-CD-011-001 ICD BETWEEN THE ECS AND THE VERSION 0 SYSTEM	ECS/HAIS ESDIS		VERSION 1/2/3 01
D-F	209-CD-005-001 ICD BETWEEN THE ECS AND THE SCF'S	ECS/HAIS ESDIS		VERSION 1/2/3 02
J-D	209-CD-001-001 ICD BETWEEN THE ECS AND THE NSI	ECS/HAIS ESDIS NSI		VERSION 1/2/3 03
M-D	209-CD-013-001 (ECS) ICD BETWEEN ECS AND THE LANDSAT 7 SYSTEM	ECS/HAIS LANDSAT 7		VERSION 2 04
D-E	209-CD-002-001 ICD BETWEEN THE ECS AND THE ASTER GDS	ECS/HAIS: ESDIS MITI		VERSION 2 05
68-D	209-CD-007-001 ICD BETWEEN ECS AND TSDIS	ECS/HAIS ESDIS TSDIS		VERSION 1 06
D-58	209-CD-006-001 ICD BETWEEN THE ECS AND THE NOAA ADC	ECS/HAIS ESDIS NOAA		VERSION 1/2 07
8-D	209-CD-012 (ECS) INTERFACE CONTROL DOCUMENT BETWEEN ECS AND SDVF	ECS/HAIS EOS-AM PROJECT/ LOCKHEED-MARTIN		VERSION 2 08
10-D	209-CD-003-001 ICD BETWEEN ECS AND EOS-AM PROJECT FOR S/C ANALYSIS SOFTWARE	ECS/HAIS EOS-AM PROJECT/ LOCKHEED-MARTIN		VERSION 2 10
	209-CD-004-001, DATA FORMAT CONTROL DOCUMENT FOR THE EOS AM1 PROJECT DATA BASE	ECS/HAIS EOS-AM PROJECT/ LOCKHEED-MARTIN		VERSION 2 11
41-42	209-CD-TBD-001 ICD BETWEEN THE ECS AND THE ORNL V0 DAAC	ECS/HAIS ESDIS ORNL		VERSION 2 12
39-40	209-CD-TBD-001 ICD BETWEEN THE ECS AND THE ASF V0 DAAC	ECS/HAIS ESDIS ASF		VERSION 2 13
31-32	209-CD-010-010 ICD BETWEEN THE ECS AND THE EDC V0 DAAC	ECS/HAIS ESDIS EDC DAAC		VERSION 2 14
27-28	209-CD-TBD-010 ICD BETWEEN THE ECS AND THE LARC V0 DAAC	ECS/HAIS ESDIS LARC DAAC		VERSION 1 15
29-30	209-CD-008-010 ICD BETWEEN THE ECS AND THE GSFC V0 DAAC	ECS/HAIS ESDIS GSFC DAAC		VERSION 1 16
33-34	209-CD-TBD-001 ICD BETWEEN THE ECS AND THE JPL V0 DAAC	ECS/HAIS ESDIS JPL DAAC		VERSION 2 17
35-36	209-CD-009-001 ICD BETWEEN THE ECS AND THE MSFC V0 DAAC	ECS/HAIS ESDIS MSFC DAAC		VERSION 1 18
37-38	209-CD-TBD-001 ICD BETWEEN THE ECS AND THE NSIDC V0 DAAC	ECS/HAIS ESDIS NSIDC		VERSION 2 19
D-46	TBD (ECS) ICD BETWEEN ECS AND THE SEDAC	ECS/HAIS ESDIS CIESIN		VERSION 2 20
C-D	TBD (TRW) ICD BETWEEN EDOS AND THE EOS GROUND SYSTEM	EDOS/TRW ECS/HAIS		VERSION 2 21
C-16	TBD (TRW) ICD BETWEEN EDOS AND THE NCCDS	EDOS/TRW NCCDS		VERSION 2 22
C-12	TBD (TRW) ICD BETWEEN EDOS AND THE TDRSS GROUND TERMINALS (TGT)	EDOS/TRW STDN		VERSION 2 23
C-L	TBD (TRW) ICD BETWEEN EDOS AND EBNET	EDOS/TRW EBNET		VERSION 2 24
C-N	TBD (TRW) ICD BETWEEN EDOS AND ETS	EDOS/TRW ETS/CSC		VERSION 2 25
C-G	TBD (TRW) ICD BETWEEN EDOS AND NOAA	EDOS/TRW NOAA		VERSION 2 26

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**Table 2-2. EOSDIS Data Interfaces—ICD and DFCD (2 of 2)**

NSQ NO	DOCUMENT	PARTIES	ESDIS NO	COMMENTS
C-E	TBD (TRW) ICD BETWEEN EDOS AND THE ASTER GROUND DATA SYSTEM (GDS)	EDOS/TRW MITI-ASTER		RELEASE B 27
20-24	540-041 INTERFACE CONTROL DOCUMENT BETWEEN ECOM AND GSFC EOC	EBNET ECS/HAIS		RELEASE B 28
17-20	540-034, CSC/TR-94/<NNN> INTERFACE CONTROL DOCUMENT BETWEEN EBNET AND FDF	EBNET FDF		RELEASE B 29
15-20	540-033, CSC/TR-94/6139 EBNET ICD WITH THE MESSAGE SWITCHING SYSTEM (MSS)	EBNET NASCOM		RELEASE B 30
11-20	540-043 INTERFACE CONTROL DOCUMENT BETWEEN EBNET AND THE LAUNCH PROCESSING FACILITY	EBNET EOS-AM PROJECT/ LOCKHEED-MARTIN		RELEASE B 31
7-20	540-038 INTERFACE CONTROL DOCUMENT BETWEEN EBNETAND SCITF	EBNET EOS-AM PROJECT/ LOCKHEED-MARTIN		RELEASE B 32
19-20	540-036 INTERFACE CONTROL DOCUMENT BETWEEN EB NETAND ETS	EBNET ETS		RELEASE B 33
20-34	540-044 INTERFACE CONTROL DOCUMENT BETWEEN EBNETAND JPL DAAC	EBNET JPL DAAC		RELEASE B 34
20-32	540-042 INTERFACE CONTROL DOCUMENT BETWEEN EBNETAND EDC DAAC	EBNET EDC DAAC		RELEASE B 35
20-30	540-032 INTERFACE CONTROL DOCUMENT BETWEEN EBNET AND GSFC DAAC	EBNET GSFC DAAC		RELEASE B 36
20-28	540-039 INTERFACE CONTROL DOCUMENT BETWEEN EBNET AND LARC DAAC	EBNET LARC DAAC		RELEASE B 37
20-36	540-040 INTERFACE CONTROL DOCUMENT BETWEEN EBNET AND MSFC DAAC	EBNET MSFC DAAC		RELEASE B 38
13-C	DSN MDOD-1CD-182 ICD GSFC TO JPL FOR GSFC MISSIONS USING DSN	DSN EDOS/TRW EBNET		RELEASE B 39
14-C	513-4I-CD-0192 ICD MO&DSD TO WOTS	EDOS/TRW WOTS EBNET		RELEASE B 40
15-D	541-185 NASCOM OPERATIONAL LOCAL AREA NETWORK (NOLAN) ICD	ECS/HAIS ESDIS NASCOM		RELEASE A 42
16-D	530-NCCDS-TBD ICD BETWEEN THE GSFC MOCs AND THE NCCDS	STDN ECS/HAIS EDOS/TRW, EBNET		RELEASE B 43
17-24	550-FDF-TBD ICD BETWEEN THE FDF AND THE ECS/FOS FOR EOS AM1	ECS/FOS FDF		RELEASE B 44
17-29	TBD (FDF) ICD BETWEEN THE FDF AND THE GSFC DAAC	FDF ECS/HAIS		RELEASE B 45
9-D	TBD (EOS-AM) INTERFACE CONTROL DOCUMENT BETWEEN ECS AND SSIM	ECS/HAIS EOS-AM PROJECT/ LOCKHEED-MARTIN		RELEASE B 46
(A)	IS20008658 ICD, DATA FORMAT CONTROL BOOK FOR EOS-AM SPACECRAFT (ICD-106)	EOS-AM PROJECT/ LOCKHEED-MARTIN		UNILATERAL RELEASE B 47
6-12	IS20008504B, RADIO FREQUENCY ICD EOS-AM SPACECRAFT TO STDN (ICD-104)	STDN EOS-AM PROJECT/ LOCKHEED-MARTIN		RELEASE B 48
6-14	531-RFICD-EOSAM/WPF RADIO FREQUENCY ICD EOS-AM SPACECRAFT TO WOTS	STDN, WOTS EOS-AM PROJECT/ LOCKHEED-MARTIN		RELEASE B 50
6-18	IS20008696, DIRECT ACCESS SYSTEM USER'S GUIDE (ICD-107)	EOS-AM PROJECT/ LOCKHEED-MARTIN		UNILATERAL OBSOLETE RELEASE B 51
67-D	560-203.103 ICD BETWEEN ECS AND SDPF (TRMM)	SDPF ECS/HAIS		RELEASE A 52
(C)	560-EDOS-0230.0001 EDOS DATA FORMAT REQUIREMENTS DOCUMENT (DFRD)	EDOS/TRW		UNILATERAL RELEASE B 25 (IRD LIST)
D	313-CD-003-001 CSMS INTERNAL ICD FOR THE ECS PROJECT	ECS/HAIS		RELEASE B

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### **2.3.2 Landsat-7 Project**

The Landsat-7 Project provides Level 0R data to an EOSDIS SDPS archive. EOSDIS maintains the archives, carries advertisements for Landsat-7 data, and distributes the data to requesters.

The MRR and DMR to acquire NASA institutional support services are Landsat-7 Project documents. Interfaces with the National Oceanic and Atmospheric Administration (NOAA) and data acquisition requesters are the responsibility of the Landsat-7 Project.

### **2.3.3 EOS AM Project**

ESDIS, through its projects, contractual efforts, and interfaces with institutional systems, provides the full range of EOSDIS capabilities for the EOS AM Project.

### **2.3.4 EOS PM Project**

ESDIS provides the full range of EOSDIS capabilities for the EOS PM Project.

### **2.3.5 EOS Chemistry and Special Flights Project**

ESDIS provides the full range of EOSDIS capabilities for the EOS Chemistry Spacecraft. Specific EOSDIS capabilities to support the Laser Altimetry and Radar Altimetry spacecrafts are TBR.

### **2.3.6 Flights of Opportunity**

Flights of Opportunity (FOOs) managed by center flight projects include Stratospheric Aerosol and Gas Experiment-III (SAGE-III) on the Russian Meteor 3M-1 (Langley Research Center [LaRC], August 1998 launch) and SeaWinds on Japan's Advanced Earth Observing System-II (ADEOS-II) (Jet Propulsion Laboratory [JPL], February 1999 launch). EOSDIS interfaces include Level 0 and ancillary data ingest and standard product distribution. ESDIS interfaces for electronic network communications, instrument operations, and forward/return link processing are TBD.

### **2.3.7 Other Flight Projects (for Version 0)**

EOSDIS will archive and distribute data from various NASA and International Partner Earth Science flight project missions that are in operations during the EOSDIS Version 0 time frame. Version 0 is the first of four versions planned for EOSDIS. Most of the data will be transferred into EOSDIS Version 0 initially (or will be accessible from other data systems via Version 0), with a subsequent transfer into EOSDIS Version 1.

### **2.3.8 Science Computing Facilities**

SCFs are for the use of EOS program investigators. ESDIS, via EOSDIS, provides communications between ECS and SCFs and toolkits for SCF interactions with the SDPS. For those SCFs involved in instrument operations, ECS provides an Instrument Support Toolkit

(IST) at the SCF consisting of communications with the EOS Operations Center (EOC), a toolkit to enable spacecraft operations data interpretation, instrument engineering data processing, instrument processor memory dump reception, an instrument command request to the FOS, and instrument processor loads to the FOS. The ECS/IST interface is considered an ECS internal interface.

## **2.4 ESDIS Interfaces With External Organizations**

### **2.4.1 NOAA-Affiliated Data Centers**

Data products from NOAA and NASA missions are exchanged via interfaces between NOAA data centers and the EOSDIS SDPS.

### **2.4.2 NOAA Operational Data Systems**

Data from EOS instruments, required by NOAA for operational purposes, are provided at an EOS Data and Operations System (EDOS)/EOSDIS Backbone Network (EBnet) interface and/or through other TBD interfaces to be negotiated between NASA and NOAA.

### **2.4.3 Ministry of International Trade and Industry—Japan**

The Ministry of International Trade and Industry (MITI) provides the Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER) instrument on EOS AM-1 in addition to providing the Instrument Control Center (ICC) and Science Data Processing System for ASTER. Interfaces for operations will be provided cooperatively between ECS and MITI, EBnet and MITI, EDOS and MITI, and the ASTER SCF (JPL) and MITI.

### **2.4.4 National Space Development Agency of Japan**

TRMM, ADEOS, and ADEOS II are cooperative missions between NASA and the National Space Development Agency of Japan (NASDA). EOSDIS will provide interfaces for Level 0 and ancillary data ingest and distribution of ADEOS/SeaWinds and related data. EOSDIS will also provide communications interfaces (TBR) for SeaWinds science data processing and SeaWinds instrument operations.

### **2.4.5 Canadian Space Agency**

The Canadian Space Agency (CSA) provides the Measurements of Pollution in the Troposphere (MOPITT) instrument for the EOS-AM-1 mission and the TBD mission. EOSDIS interfaces with CSA are TBD.

### **2.4.6 European Space Agency**

The European Space Agency (ESA) provides the Multifrequency Imaging Microwave Radiometer (MIMR) instrument for the EOS PM-1 mission. EOSDIS interfaces with ESA are TBD.

## **2.5 ESDIS Interfaces With EOSDIS Projects and From Contracts**

### **2.5.1 ECS Contract**

The ECS Contract effort is developing the FOS, the SDPS, and the CSMS for EOSDIS. The ECS interfaces with all other projects associated with EOSDIS. The data interfaces with the DAACs are managed through the ECS Contract and the Version 0 Project.

### **2.5.2 ETS Project**

The EOSDIS Test System (ETS) Project provides test capabilities for EOSDIS. Physical interfaces are with EBnet and EDOS. Data interfaces are with ECS and EDOS.

### **2.5.3 EDOS Project**

EDOS receives telemetry and sends command streams through the Tracking and Data Relay Satellite System (TDRSS) to/from EOS. EDOS receives command transmissions from the ECS/FOS via EBnet. EDOS processes the telemetry bit streams into datasets, archives them, and delivers dataset files to ECS and other projects or facilities via EBnet or physical media.

When radio frequency (RF) communications with EOS spacecraft are not through the TDRSS, EDOS sends command bit streams and receives telemetry bit streams from the Deep Space Network (DSN) stations, the Wallops Orbital Tracking Station (WOTS), the Ground Network (GN) stations, the Direct Access System (DAS) stations (TBR), the Spacecraft Integration and Test Facility (SCITF), the launch site station, and EOSDIS Test System interfaces via EBnet. EDOS may receive science data from a DAS ground station interface via physical media transfers or EBnet (TBR).

### **2.5.4 EOSDIS Backbone Network Project**

EBnet provides the operations communications capabilities and interfaces among the various EOS Ground System (EGS) elements, such as between the NASA Institutional (operations) Support Systems (NISS) and ECS, between NISS and EDOS, between EDOS and ECS, and between EDOS and the DAACs.

### **2.5.5 EOSDIS Independent Verification and Validation Contract**

Independent Verification and Validation (IV&V) Contract personnel interface with EDOS, EBnet, ECS, and TBD to perform and monitor verification and validation activities. The IV&V effort uses operational interfaces for test activities to enable the verification of required capabilities as per the approved requirements specification and the validation of operational performance for the EOS mission.

### **2.5.6 Direct Access System Network Project**

The DAS Network Project (TBD) acquires instrument data directly from the EOS spacecraft to ground stations as a backup to TDRSS. The DAS Network Project may be a NASA Institutional System funded by NASA Headquarters Code O and implemented by GSFC. The interfaces with EOSDIS are TBD.

### **2.5.7 EOSDIS Version 0 Project**

EOSDIS Version 0 is a project to form the initial capabilities of this system by building on existing discipline-specific Earth science data centers and data systems and by developing a “pathfinder” activity to create datasets from existing operational data that are critical to global change research. The EOSDIS Version 0 system interfaces with ECS for interoperability and for transfer of archives to ECS from data systems and archives accessible by the Version 0 system.

## **2.6 ESDIS Interfaces With NASA Institutional Systems**

### **2.6.1 Program Support Communications Network**

The Program Support Communications Network (PSCN) provides communications services within ECS, including IST/EOC communications. The PSCN also provides communications management services to CSMS. The PSCN is managed and funded by NASA Headquarters Code O and implemented by the Marshall Space Flight Center.

### **2.6.2 NASA Science Internet**

The NASA Science Internet (NSI) provides communications between ECS and SCFs, between ECS and other EOS investigators, and between ECS and the Internet. NSI also provides communications management services to CSMS. NASA Headquarters Code Y manages and funds the NSI, which is operated by the Ames Research Center.

### **2.6.3 Deep Space Network**

The DSN provides emergency radio communications with in-orbit EOS spacecraft. Nascom and EBnet provide ground communications between the DSN stations and EDOS for transfer of command and telemetry data. NASA Headquarters Code O manages and funds the DSN, which is operated and maintained by JPL.

### **2.6.4 Wallops Orbital Tracking Station**

WOTS provides emergency radio communications with in-orbit EOS spacecraft. Nascom and EBnet provide ground communications between WOTS and EDOS for transfer of command and telemetry data. NASA Headquarters Code O manages and funds WOTS, which is operated and maintained by GSFC.

### **2.6.5 Nascom**

Nascom provides operations communications network services within NASA, including operations communications and operations communications interfaces with international and other national operations facilities. NASA Headquarters Code O manages and funds Nascom, which is implemented and operated by GSFC.

### **2.6.6 Flight Dynamics Facility**

The GSFC Flight Dynamics Facility (FDF) provides operational orbit determination, orbit predictions, and maneuver parameters to ECS. The FDF provides TDRS Onboard Navigation

System (TONS) operations support and maintenance. The FDF provides attitude determination and attitude control evaluation to ECS. ECS provides housekeeping telemetry parameters and TBD to FDF. NASA Headquarters Code O manages and funds the FDF, which is operated and maintained by GSFC.

#### **2.6.7 Ground Network**

The GN provides emergency radio communications with in-orbit EOS spacecraft. Nascom and EBnet provide ground communications between the GN and EDOS for transfer of command and telemetry data. NASA Headquarters Code O manages and funds the GN, which is operated and maintained by JPL.

#### **2.6.8 Network Control Center**

The Network Control Center (NCC) provides network management services to the ECS for Space Network (SN) services and TBD. NASA Headquarters Code O manages and funds the NCC, which is operated by GSFC.

#### **2.6.9 TDRSS Ground Terminals**

The TGTs provide the command and telemetry interfaces between the SN and EDOS for EOS flight missions. NASA Headquarters Code O manages and funds the TGTs, and GSFC maintains and operates them.

#### **2.6.10 Sensor Data Processing Facility**

The Sensor Data Processing Facility (SDPF) performs data capture, Level 0 processing, and dataset distribution for non-EOS science missions such as TRMM. NASA Headquarters Code O manages and funds the SDPF, which is operated and maintained by GSFC.

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## Section 3. Interface Control Process

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### 3.1 Roles and Responsibilities

The EOSDIS mission requires the integration of data systems, communications systems, and operations systems for the following projects:

- Flight projects (including flight instruments and flight operations)
- NASA institutional operations projects
- EDOS Project
- EBnet Project
- ETS Project
- ECS Contract
- PSCN Project
- V0 Project
- NSI Project
- International Partner Projects
- NOAA Projects
- DAAC Projects
- EOS Science Project

ESDIS is responsible for managing and coordinating the integration of the above listed projects' data, communications, and operations systems. This document is prepared by ESDIS to define the ESDIS plan for managing the identification, definition, and implementation of the interfaces among those projects.

ESDIS identifies the requirement for each project-to-project interface. The requirement is included in the EOSDIS requirements documents and may be expanded in an MOU, an IPA, a project implementation plan, or a project data management plan (PDMP). If the functional and performance requirements of that interface are known and agreed on, those requirements will be included in the projects' functional and performance requirements specifications (F&PRSs). This circumstance makes the creation of interface documentation considerably easier.

When the functional and performance requirements must be developed by the interfacing projects, the negotiated requirements are defined in IRDs. The interface requirements in the IRDs must be imposed on the implementing organizations or contractors at the same level as requirements in their F&PRS. ESDIS approves the IRDs before imposition of the requirements on the implementing organization if cost, schedule, or performance are affected. The ESDIS Requirements Management Plan defines the ESDIS process for managing the requirements. The ESDIS Configuration Management Plan defines the ESDIS process for managing approval of the

IRDs and ICDs (see Section 1.3, Applicable Documents). Project and contractual changes that impact the interface definitions and requirements are factored into the interface documentation either as part of the initial version before approval or as changes thereafter.

As a result of interface requirements, the interfacing projects' implementing organizations develop joint ICDs. These ICDs define the physical and performance parameters of the exact design they will implement to meet the interface requirements specified in their IRDs and their F&PRs. Each project that is a party to the ICD manages approvals of ICDs that describe how designs meet approved requirements. ESDIS performs configuration management (CM) of ICDs approved by interfacing projects.

The interfacing projects implement the interfaces in accordance with the designs disclosed in their ICDs. In addition, they demonstrate that the interfaces perform functions required by the interface requirements, and they maintain configuration control of designed and implemented interfaces.

The IV&V contractual effort verifies that the integrated projects' configured interfaces meet the approved IRDs and Level 3 F&PRs.

## **3.2 Interface Control Working Group**

This ICP establishes the Interface Control Working Group (ICWG). The ICWG verifies that the development of the EOSDIS interfaces is proceeding as needed for orderly integration of EOSDIS.

The ESDIS System Management Office has established the ICWG to facilitate the development and approval of interface control documents and to provide oversight of the interface development process. The Chairperson of the ICWG is the Interfaces Manager in the System Management Office.

The goals of the ICWG are to

- Coordinate technical approval of EOSDIS data interface requirements for use by implementation contractors
- Facilitate interfacing projects' approval of interface control documents to control interface designs
- Routinely assemble interface management data for the ESDIS Project managers

The purposes of the ICWG are to

- Track ESDIS IRDs, ICDs, and DFCDs
- Provide a technical review of IRDs and ICDs/DFCDs
- Facilitate ESDIS (Code 505) CCB approval of IRDs and ICDs/DFCDs

The ICWG is composed of representatives of each of the projects with EOSDIS interfaces. The membership of the ICWG will change in the future as new projects develop, new interfaces are identified, and current projects and interfaces move into their operational phases. At present, the composition of the ICWG is as shown in Table 3-1.

**Table 3-1. Interface Control Working Group Composition**

<b>Project</b>	<b>NASA Member/ Government Member</b>	<b>Contractor Member</b>
EOS AM	X	
NISS	X	
STDN		
DSN		
WOTS		
Nascom		
NCC		
FDF		
DAS Network		
ETS	X	X
EBnet	X	
EDOS	X	X
ECS	X	X
FOS	X	X
CSMS	X	X
SDPS	X	X
TRMM Project	X	
TSDIS		
NASA Science	X	
Internet		
ESDIS	X	
Requirements	X	
SCFs	X	
V0	X	
Users		
NASDA		
MITI		
NOAA Operations		
NOAA ADC		
IV&V	X	X
EOS PM	X	X
Special Projects		
CERES		
LIS		
SAGE III		
COLOR		
SeaWindS		
RADAR Alt		
MR		
DFA		
ACRIM		
SOLSTICE		
CHEM		
LASER ALT		

Attendance at ICWG meetings varies depending upon what was in the previously distributed agenda. Attendees often represent multiple activities; e.g., there are one or two representatives from the systems implementation team discipline. The mailing list for ICWG meeting minutes and meeting agendas is substantially larger than the membership list, so ICWG activities are widely known. Book authors, book bosses, and CCB members are frequent attendees.

At the discretion of the Chairperson, two ICWG meetings will be scheduled each month. One meeting will be a status reporting meeting. This meeting's standard agenda will be to determine the status of interface documentation and identify issues concerning interfaces. The second meeting will follow the first meeting by 1 week and will be to discuss special topics aimed at resolving selected issues with the relevant representatives.

The standard topics for the monthly ICWG status meeting are as follows:

1. Changes to the membership list by name—Each Project Representative
2. Changes to the ESDIS IRD Master Schedule (Figure C-1) and the ESDIS ICD Master Schedule (Figure C-2) since the previous meeting—Each Project Representative
3. Changes to the ESDIS IRD Listing (Figure C-4) and the ESDIS ICD Listing (Figure C-5)—Each Project Representative
  - Document name, title, number changes
  - Current status changes
  - Issues
  - New interfaces/documents
  - TBD/TBR status and plans
4. Update of ICWG IRD Criticality Matrix (Figure C-6)—Book Boss
5. Identification of new action items
6. Review of old action item status
7. Identification of special topics and representatives required for subsequent special topics meetings

Minutes will be distributed electronically after each meeting. Paper copies of the EOSDIS data interfaces diagram, the ESDIS IRD/ICD Master Schedules, the ESDIS IRD/ICD Listing, and the ICWG Criticality Matrix will be provided to the attendees at each meeting. Representatives presenting material at the meetings are to provide enough copies for attendees. The ICWG will maintain an electronic mailing list for the distribution of interface issues, ICWG agendas, minutes, and other documentation of concern to ICWG.

Project representatives are expected to be familiar with the content of the MOUs, IPAs, IRDs, and ICDs covering interfaces with their project. They should plan on providing the current status and plans concerning the documentation, implementation, deployment, and verification at each ICWG meeting. They should prepare and submit the configuration change requests (CCRs) required to baseline the interface documentation in their projects and support the change board meetings to approve the documents. In addition, they should support the change board meetings of interfacing projects to approve the documents and document changes.

A special IRD/ICD Status Matrix (see Figure C-3) will be used to provide a statistical means of tracking planned versus actual completions. In this matrix, the total IRDs/ICDs are listed by originator. ECS is the largest category, followed by EDOS, EBnet, ESDIS, and AM-1 (mission-specific). Three columns are provided to list totals by development and approval stages: Originating Organization Baseline, ESDIS CCB, and the interfacing organization's CCB. A fourth column is provided for future IRDs/ICDs, such as PM-1 and COLOR. Columns are also provided to list both planned and actual totals.

To keep the IRD/ICD Status Matrix up to date, the plan is to identify representatives from each originator who are to provide information at the ICWG meetings pertaining to the number of IRDs/ICDs that have been completed or are still being developed. The support contractor will be responsible for logging all changes provided at the ICWG meeting and then making these changes to the actual matrix. The support contractor will also provide copies of the most recent matrix at each ICWG meeting.

### **3.3 Interface Requirements Documents—Development, Review, and Approval**

The IRDs are developed to define the interface requirements between EOSDIS projects as well as between EOSDIS projects and projects interfacing with EOSDIS. The purpose and scope of the interfaces are contained in the ESDIS Level 2 requirements, the payload implementation plans, the IPAs (flight), PDMPs, and interproject-level MOUs. The IRDs are developed to define the Level 3 functional and performance requirements of the interfaces. Appendix A contains an example of an IRD outline. The content and presentation of the IRD may be modified to meet contractual requirements of the individual project identified by the ICWG Chairperson as the producing agent of an IRD. The following process applies not only to interfaces known at program startup but also to follow-on interfaces as well.

Each pair of interfacing projects identifies the IRDs needed on the basis of applicable Level 2 requirements, Level 3 requirements, IPAs, payload implementation plans, PDMPs, and MOUs. One of the projects is selected as the producing agent of each IRD after discussions with each project's representatives. For some interfaces, an ESDIS Project representative may represent an interfacing project. An ESDIS Project representative is identified for each IRD (the "Book Boss") to represent ESDIS interests during the interface development. It is the responsibility of the ESDIS Project representative to initiate and support the CM process to obtain ESDIS approval of the IRD and subsequent ICDs.

The project selected as the producing agent for an IRD is responsible for the development and maintenance of the IRD and the schedule through the final approval of the IRD by the Project Manager.

The producing agent (the author(s)) will perform the following:

- Schedule coordination meetings with interfacing projects' representatives and the ESDIS representative. This group—the producing agent's representative, the ESDIS representative, and the interfacing project's representative—is the ICWG core group for the IRD.
- Incorporate material into the IRD from the producing agent project and from the interfacing projects, such as systems descriptions, operational context and data flow, functional and performance interface requirements, and interface control documentation plans.
- Prepare a draft version of the IRD and schedule and conduct a coordination meeting with representatives from ESDIS and the interfacing projects.
- Correct the IRD on the basis of the coordination meeting results. Unresolved and to be resolved/to be determined (TBR/TBD) issues will also be recorded in the next draft of the IRD.

- Present the second draft of the IRD as a review item disposition (RID) document at the producing agent's project System Requirements Review (SRR).
- Arrange a coordination meeting of the core group to review RIDs affecting the IRD.
- Change the IRD to reflect RIDs, resolution of the TBRs/TBDs, and resolution of issues to the extent possible. Remaining issues and TBRs/TBDs will be retained in the next version of the IRD. This is the preliminary version of the IRD.
- Present the preliminary version of the IRD at the project's System Design Review (SDR).
- Approve the IRD as the producing agent's project baseline after SDR discrepancies affecting the IRD have been resolved.
- Use the baselined IRD requirements contractually to develop the interface design.
- Deliver the baselined IRD to the ESDIS and to the interfacing projects for approval.

The interfacing projects will perform the following:

- Participate in the ICWG core group coordination processes and in the formal review processes of the producing agent project.
- Keep the ESDIS and the producing agent aware of all costs, schedules, and performance impacts resulting from the IRD during IRD development and coordination.
- Approve the baselined IRD.
- Provide the approval notification to ESDIS with any resulting cost, schedule, and performance impacts.
- Use the baselined IRD requirements contractually to develop its interface design.
- Present the IRD at the interfacing project's Preliminary Design Review.

The ESDIS Project will perform the following:

- Participate in the ICWG core group coordination processes and in the formal review processes of the producing agent project and the interfacing projects.
- Facilitate IRD and ICD development through the ICWG.
- Approve the IRD and ICD.
- Distribute the approved version of the IRD and ICD to the interfacing projects.

The ESDIS representatives to the ICWG core group will initiate the ESDIS CM process to approve the IRD. The producing agent and the other interfacing projects will be notified of the approval of the IRD by the ESDIS Project. On receiving the ESDIS approval notification, the interfacing projects will incorporate the interface requirements of the IRD into its set of functional and performance requirements for implementation by contractors.

All CCB minutes and agendas will be distributed electronically to a regular distribution list to be defined by the Configuration Management Office (CMO). This list will include a core group of

the ICWG, project personnel, development contractors, and EOSDIS support contractors. CCRs will also be distributed to the ICWG for review and evaluation.

An IRD-level document is prepared by each flight project mission to identify the operational requirements for support from the NISS. This document is the DMR. DMRs will be considered to be IRDs by the ICWG for those requirements that affect cost, schedule, and performance of EOSDIS.

### **3.4 Interface Control Documents—Development, Review, and Approval**

The external ICDs to be prepared are identified in the IRD and in the projects' contracts with their implementation contractors. Appendix B contains an example of an ICD outline. The content and the presentation of the ICD may be modified to meet the contractual requirements of the project selected to be the producing agent. The producing agent of the ICD will be the project that designs and implements to meet the interface requirements. If more than one project performs design and implementation for the interface, project representatives will meet to identify the producing agent. Issues in this process will be brought to the next ICWG meeting by the ESDIS representative for the interface.

DFCDs may be used in lieu of ICDs or in addition to ICDs. The DFCD contains the same information as an ICD except that physical and protocol interface characteristics are separately controlled by standards or other ICDs.

The ICWG will identify the ICDs, project databases, and DFCDs to be prepared by each project for inclusion on the EOSDIS data interfaces diagrams. Review and approval of ICDs, project databases, and data format control books are the responsibility of the interfacing projects. Approvals must be obtained at the appropriate assigned level, including the ESDIS CCB. The projects' representatives will provide current status, schedules, and issues at each ICWG Status meeting.

At the conclusion of the producing agent's Critical Design Review (CDR), the ESDIS representative for the document will initiate the ESDIS CM process for interface control documentation.

### **3.5 Interface Definition Documents—Changes and Updates**

After an interface document (IRD or ICD) has been placed under CM or during the approval process, the party requiring the change will prepare a CCR to change the interface requirements and will have coordinated the particulars with the affected parties. They will also pursue these changes through their local CM process. The ICWG will review the CCR at a special topics meeting. If the ICWG estimates that cost, schedule, or performance will be affected as a result of the change, the affected interfacing projects' representatives will be tasked to assemble their impact data for presentation at the next status meeting. After that meeting, the ESDIS representative for that interface document will initiate the CM review and approval of the CCR. After ESDIS approval and baselining of the CCR, the changes will be made to the document. The revised document will be delivered to ESDIS and each interfacing project. Each interfacing project will impose the changes upon its development contractor.

### **3.6 IRD and ICD Schedules**

The ESDIS Project Systems Management Office maintains the EOSDIS Master Project Schedule, shown in Figure 3-1. The current version and status of that schedule can be obtained



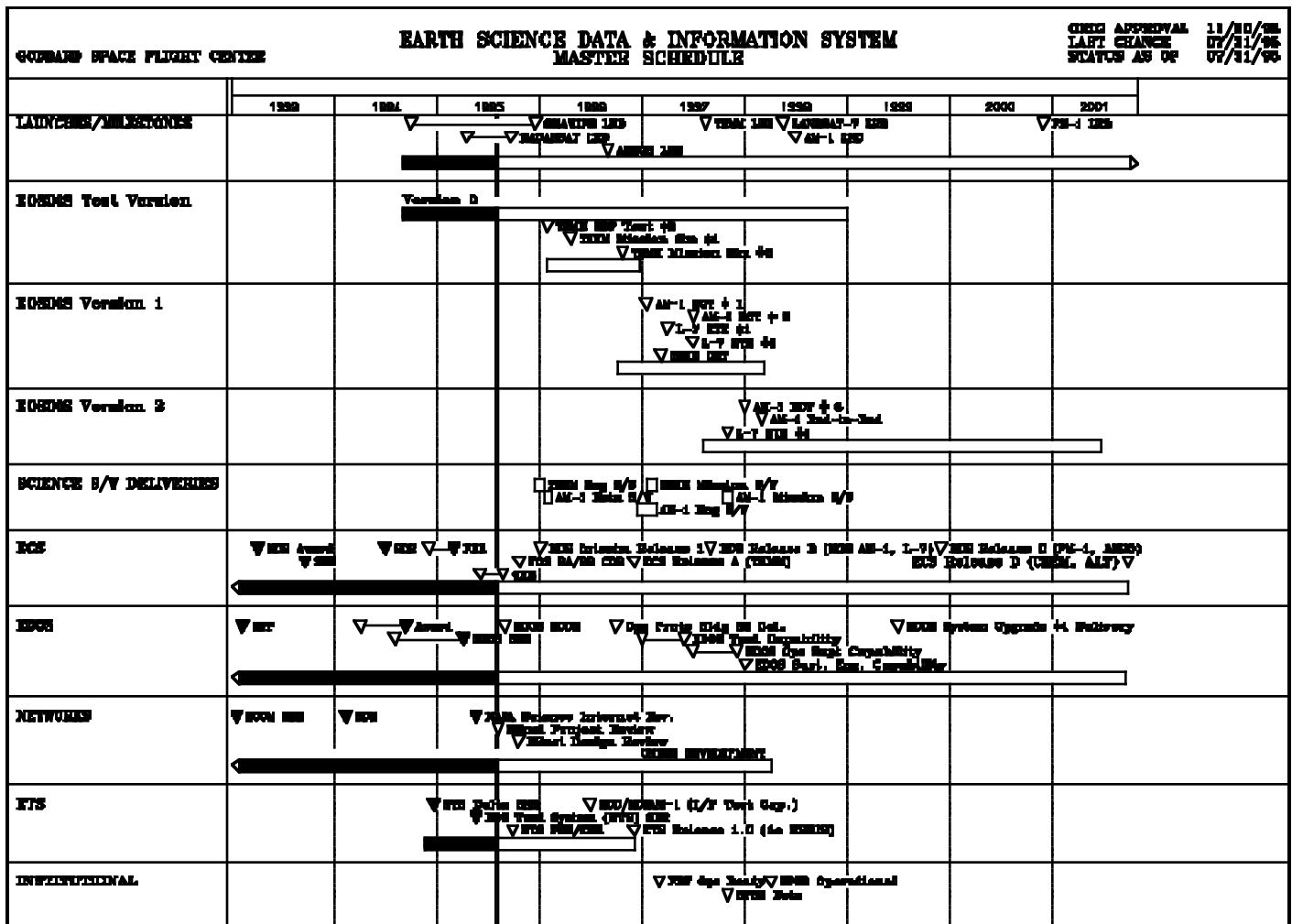


Figure 3-1. ESDIS Master Project Schedule

from that office or from the ESDIS server. This plan will not be revised solely to reflect schedule changes.

Figures C-1 and C-2 show the ESDIS IRD and ICD tracking schedules. This matrix will be distributed at the monthly ICWG Status Meeting. This schedule will be updated each month at the meeting on the basis of current status provided by the projects' representatives. The ICWG support contractor will update and distribute this schedule each month. (This document will not be revised solely to reflect schedule changes.) IRD and ICD listings as shown in Figures C-4 and C-5 will be maintained by the ICWG support contractor and provided as a handout at the monthly status meeting.

The ICWG IRD/ICD Status Matrix (Figure C-3) and the ICWG IRD Criticality Matrix will be updated monthly for ESDIS Project Management status reviews.

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## Section 4. Interface Verification Process

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### 4.1 Verification of Requirements

Each EOSDIS Project or contract has interface management responsibilities for tracing its Level 3 functional and performance requirements down to its interface design requirements. In addition, the projects are responsible for verifying that the design of the interface and the implemented interface meet those design requirements. Each project defines its methods for formal verification for each requirement in the requirements documents. These verification methods and the results of the verification process are presented at formal reviews, leading to acceptance of the interface for operations. The operational functionality of the interfaces is demonstrated to EOSDIS by operating the systems through the interfaces to show that selected operational scenarios can be performed.

The EOSDIS IV&V Contract effort provides oversight during the interface development process. After each release readiness review, IV&V will perform EOSDIS system-wide testing to verify the system adherence to the Level 2 requirements. The IV&V contractor will also perform component, interface, and system validation that the implementations meet the operational needs of the EOS mission. Validation testing will address the IRD requirements as well as the Level 2 and Level 3 requirements.

### 4.2 IV&V Plan

The *Independent Verification and Validation Plan* (IVVP, Reference 11 in Section 1.3) defines the interface document verification process. The IV&V Contractor analyzes IRDs and ICDs using the methodologies defined in the IVVP. Technical analysis memoranda and technical analysis reports are prepared and delivered to document the analysis findings. IRD analysis results are captured in an Automated Requirements Database (ARDB). Interface data definitions are captured in an Interface Analysis Database (IADB).

The *EGS System Integration and Test Plan* (Reference 12 in Section 1.3), to be delivered September 1, 1995, will include a description of the interface test approach.

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## Appendix A. IRD Annotated Outline

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This appendix presents a sample annotated outline each project can use as a guide in preparing IRDs and DFCDs. It represents the minimum contents of an IRD and allows additional sections or information as appropriate. Three formal versions of each IRD will be developed: draft, baseline, and final. The baseline and final versions will have all sections completed. The draft versions may have some sections partially completed as indicated by an asterisk below.

1. Introduction
  - 1.1 Identification
  - 1.2 Scope
  - 1.3 Purpose and Objectives
  - 1.4 Status and Schedule
  - 1.5 Document Organization
2. Related Documentation
  - 2.1 Parent Documents
  - 2.2 Applicable Documents
  - 2.3 Information Documents
3. Systems Descriptions
  - 3.1 Systems Relationship Overview. This section describes the purpose of the interfaces and will include a diagram that is an overview of the interfaces.
  - 3.2 System 1 Description. This section contains a description of the first interfacing system.
  - 3.3 External System Description. This section contains a description of the other interfacing system.
4. Data Flow Descriptions.\* This section describes the interfaces and provides a context for understanding the formal interface requirements presented in the next section. In addition to the text, it contains a table with the following information:
  - A. Physical source of the interface (e.g., ECS)
  - B. Physical receiver of the interface (e.g., TSDIS)
  - C. Data flow name
  - D. One- or two-line description of the flow
  - E. Network or communications link supporting the interface

5. Functional and Performance Interface Requirements\* (partial or draft). This section will contain the numbered interface requirements. It may be divided into logical subsections as necessary to aid in requirements understanding.

Note that parent requirements can come from a number of sources, including the ECS F&PRSs, the statement of work (SOW), L2 requirements, IPAs, MOUs, project implementation plans, or other external system higher level requirements documents. When a parent comes from a document without numbered requirements, such as a project implementation plan, the parent will be the lowest level (most defined) section number in the parent document (e.g., Section 2.1.1.2 versus Section 2.1).

6. Interface Control Document Plan.\* This section contains related ICD information, including ICD name, responsible party, and schedule.

Appendixes:

- A. Issues and TBDs/TBRs and the plans to develop solutions
- B. Requirements Traceability Matrix
- C. Others

Abbreviations and Acronyms



## Appendix B. ICD Annotated Outline

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This appendix presents a sample annotated outline each project can use as a guide in preparing ICDs and DFCDs. Sections marked with an asterisk indicate partial completion in the preliminary version.

1. Introduction (same format as the IRDs)
  - 1.1 Identification
  - 1.2 Scope
  - 1.3 Purpose and Objectives
  - 1.4 Status and Schedule
2. Related Documentation (same format as the IRDs)
  - 2.1 Parent Documents
  - 2.2 Applicable Documents
  - 2.3 Information Documents
3. Interface Overview. This section describes the purpose of the interfaces and gives a high-level description of the flows (as an introduction to the detailed information provided in Section 4). It will include a context diagram (similar to the IRD context diagram) and also will describe the interconnect topology (networking), including a diagram.
4. Data Flow Descriptions
  - 4.1 Data Flow #1 (This section is repeated for each data flow in the interface)
    - 4.1.1 General. This section contains an identification of the data flow (data flow name) and the purpose of the flow. It will also contain the “context” information that would be contained in a data flow scenario. This context information identifies the following:
      - The functional purpose of this flow (session establishment/termination, status reporting, algorithm updating, data product distribution)
      - The system that initiates this flow (ECS subsystem or external subsystem)
      - How the flow is initiated (timer driven, data driven, push/pull)
      - How the data are delivered (electronically via EBnet, postal delivery, overnight mail)\*
      - Frequency of the flow (such as daily, weekly, during anomalies, as requested, as negotiated with the end user, when data become available)\*

- Relationship of this flow to other flows/processes (e.g., required links between data flows, such as request/response relationships; receipt and required acknowledgment; error notifications)
- Data volume/sizing estimate\*
- Backup method\*
- Special instructions,\* e.g. error handling (discard errors or retain and flag); handling of duplicate data (keep, discard, or flag)

#### 4.1.2 Detailed Data Description

4.1.2.1 Interface Method.\* This section will identify (or reference) standards for the method for exchanging information (EBnet, EOS Science Network [ESN], tape) and communications protocols (e.g., transmission control protocol/internet protocol [TCP/IP]). The information will include references to other documents that identify the required mechanical, electrical, and physical interfaces for electronic interfaces. This section will also identify the required physical information for media transfers (9-track tape, CD-ROM).

4.1.2.2 Format Ground Rules.\* This section will contain data format/transmission ground rules, such as:

- Standard media headers and delimiters (volume IDs, beginning of tape (BOT)/end of tape (EOT) markings, beginning of file (BOF)/end of file (EOF) markings)
- Data conventions (bit/byte ordering)
- Use of fill data
- Use of fixed or variable data item sizes
- Data item header/ trailer information and its usage (such as cyclic redundancy checks [CRCs] for error detection/handling, acknowledgment, special flags)

Table 4.1.2\* Detailed definition of data fields in table format, such as:

- Data type (e.g., long integer, short integer, char)
- Field length (e.g., number of bytes, number of bits)
- Bit/byte level formats
- Range of values
- Resolution (LSD) of the measurement (meters, seconds)
- Resolution of the field (millimeters, milliseconds)
- Textual description (could be a reference to another document)

#### 4.2 Data Flow #2 (etc.)

See 4.1

***Data Flow #1 Data Format Table Example\****

<b>Item Number</b>	<b>Number of Bytes</b>	<b>Data Item</b>	<b>Range of Values</b>
1	1	Message Type	0 = Product Order 1 = Something else
2	2	Message Version No.	00000000-11111111
3	2	Instrument ID	0 = Instrument 1 1 = Instrument 2 (etc.)
4	2	Product ID	0 = Product 0 1 = Product 1 (etc.)

\*Data items listed for Preliminary ICD.

Appendixes (as appropriate):

- A. Issues and TBDs/TBRs and the plans to develop solutions.
- B. Others

Abbreviations and Acronyms

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## Appendix C. IRD/ICD Schedule Formats

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The figures in this appendix illustrate the records and schedules that will be maintained for the ICWG. Generally, the information shown in the figures will be updated monthly, and copies will be distributed at the monthly ICWG status meetings.

Figures C-1 and C-2 are examples of the schedules leading to the approval of the IRDs and ICDs, respectively.

Figure C-3 is an example of the ICWG IRD/ICD Status Matrix. This figure shows the total approval status for each IRD and ICD producer.

Figure C-4 and C-5 are examples of the listings of all IRDs and ICDs, respectively. These figures show the originator, the ESDIS Book Boss, the author, and the representative of the interfacing organization, as well as counts of requirements, TBDs, TBRs, TBSs, TBCs, and issues.

Figure C-6 is an example of the ICWG Criticality Matrix. This figure shows the overall assessment of the status of the IRDs.





**Figure C-1. Example of ESDIS IRD Master Schedule (2 of 2)**





September 1995



IRDs	Total	Originating Organizations Baseline		ESDIS CCB Baseline		Interfacing Organizations Baseline		Future	Requirements	Open Issues	TBDs	TBRs	TBSs	TBCs
		Scheduled	Completed	Scheduled	Completed	Scheduled	Completed							
ECS	20	10	10	10	9	4	4	10	470	6	19	4	2	0
EDOS	5	5	0	0	0	0	0	0	253	0	0	0	0	0
EBnet	1	0	0	0	0	0	0	0						
* Other IRDs	2	2	0	0	0	0	0	0	168	0	133	4	6	0
Totals	28	17	10	10	9	4	4	10	891	6	152	8	8	0
ICDs	Total	Originating Organizations Baseline		ESDIS CCB Baseline		Interfacing Organizations Baseline		Future	Requirements	Open Issues	TBDs	TBRs	TBSs	TBCs
		Scheduled	Completed	Scheduled	Completed	Scheduled	Completed							
ECS	23	13	12	0	0	0	0	5	NA	72	161	166	68	0
EDOS	6	0	0	0	0	0	0	0	NA					
EBnet	15	0	0	0	0	0	0	0	NA					
** Other ICDs	12	8	5	0	0	5	4	2	NA	0	6	3	18	0
Totals	56	21	17	0	0	5	4	7		72	167	169	86	0
* Other IRDs include: ESDIS/NSI, and AM-1 DMR														
** Other ICDs include: NISS (X 6), AM-1 (X 5), and TRMM														
Note-1: Scheduled Vs. Completed refers to IRDs/ICDs that are scheduled to be baselined Vs. IRDs/ICDs that have actually been baselined.														
Note-2: The Future column refers to IRDs/ICDs that are planned, but not yet scheduled.														
Note-3: This matrix does not track ESDIS CCBs and Interfacing Organization Baselining as being scheduled until after the Originating Organizations have actually baselined the document.														
Note-4: In some cases there are several Interfacing Organizations associated with one document. This chart tracks all Interfacing Organizations for a given document as one item. When all of a documents Interfacing Organizations have "signed off", the Completed column will increment by one.														

Figure C-3. Example of ICWG IRD/ICD Status Matrix

Document Title	Originator #	ESDIS #	Book Boss	Phone	Author(s)	Phone	Interfacing Organization	Phone	Current Status	Current Date (1)	Reqs.	Issues	Blank	TBDs	TBRs	TBRs	TBRs
1 IRD between ECS and the Version O System	Hughes 194-219-8E1-004	505-41-11	Oreg Hunolt	286-0603	Peter Lyons	925-0302	DAACs David Han	286-8822	CCR-188 Complete	Mar-95	35	5		0	0	0	
2 IRD between ECS and SCFs	Hughes 194-219-8E1-005	505-41-12	Stan Scott	286-8817	Stan West	925-0770	NA		ESD 18 Baseline	May-95	40	0		0	0	0	
3 IRD between ECS and NSI	Hughes 194-219-8E1-001	505-41-17	Dick desJardins	286-8654	Mary Armstrong	925-0439			ECS complete	Oct-94	8	0		1	0	0	
4 IRD between ECS and NOAA ADC	Hughes 194-219-8E1-006	505-41-19	Matt Schwallier	286-0623	Rogard Ross	925-0808	NOAA Pete Topoly		ECS complete	Jan-95	45	0		4	0	0	
5 IRD between ECS and NIS6	Hughes 194-219-8E1-020	505-41-23	Gene Smith	286-4285	Carol Chachulski	925-0661	NA		ECS complete	Oct-94	33	0		0	0	0	
6 IRD between ECS and the TRMM Ground System	Hughes 194-219-8E1-018	505-41-14	Ted Ackerson	286-3208	Stan West Debbie Poch	925-0770 925-0777	TRMM MITI	286-8013	Complete	Feb-95	98	0		0	2	0	
7 IRD between ECS and MITI	Hughes 194-219-8E1-002	505-41-18	Matt Schwallier	286-0623	Carol Chachulski	925-0661	Hiroshi Watanabe		ECS-1 Complete	Oct-94	94	10		3	4	0	
8 IRD between ECS and EOS AM-1 for Flight Ops	Hughes 194-219-8E1-019	505-41-15	Angie Kelly	286-7726	Carol Chachulski	925-0661	AM-1 Ed Chang	286-8864	ECS complete	Oct-94	39	0		0	0	0	
9 IRD between ECS and the Landsat 7 System	Hughes 219-CD-003-002	505-41-13	Ted Ackerson	286-3208	Elizabeth Harech	925-0896	Landsat-7 John Martin	286-8892	ECS complete	Jan-95	25	2		3	0	0	
10 IRD between ECS and ADEOS-II	Future		Matt Schwallier	286-0623	Peter Lyons	925-0302	NA80A Kawase		Not Written								
11 IRD between ECS and SAGE-III	Future		Ted Ackerson	286-3208	TBD		Sage		Not Written								
12 IRD between ECS and Radar Altimeter	Future	505-41-28	Matt Schwallier	286-0623	TBD				Not Written								
13 IRD between ECS and ACRIM	Future		Matt Schwallier	286-0623	TBD				Not Written								
14 IRD between ECS and COLOR	Future	505-41-18	Angie Kelly	286-7726	Peter Lyons	925-0302	none		Not Written								
15 IRD between ECS and PM 1	Future	505-41-25	Angie Kelly	286-7726	TBD		PM Paul Hwang	286-8868	Not Written								
16 IRD between ECS and Chem	Future	505-41-26	Angie Kelly	286-7726	TBD		Chem Bob Nelson	286-0039	Not Written								
17 IRD between ECS and AM2	Future	505-41-29	Angie Kelly	286-7726	TBD				Not Written								
18 DAAC Unique IRD	Future	505-41-24	Oreg Hunolt	286-0603	TBD				Not Written								
19 Communications req. for the ECS project	220-CD-001-003		Dick desJardins	286-8654	Mary Armstrong	925-0439			ECS complete	Feb-95	54	0		2	0	0	
ECS IRDs TOTALS											471	17		13	6	0	
Note-1: The Current Date column refers to the most recent revision of the document available. All data came from this version of the document.																	

Figure C-4. Example of ESDIS IRD Listing (1 of 2)

Document Title	Originators #	ESDIS #	Book Boss	Phone	Author(s)	Phone	Interfacing Organization	Phone	Current Status	Current Date	Reqs.	Issues	Blank	TBDs	TBRs	TBSs	TECs
1 IRD between EDOS and EGS	500-EDOS-0211.0001	505-41-30	Gordon Knoble	288-3687			ASTER Hiroshi Watanabe NOAA TBD		DCN-008 complete	Apr-95	178	0		0	0	0	
2 IRD between EDOS and NCCDS	500-EDOS-0211.0002		Gordon Knoble	288-3687			Roger Cason		Prelim. complete	Mar-95	21	0		0	0	0	
3 IRD between EDOS and T&T	500-EDOS-0211.0003		Gordon Knoble	288-3687			David Littmann		Prelim. complete	Dec-92	14	0		0	0	0	
4 IRD between EDOS and EBnet	500-EDOS-0211.0004	505-41-38	Gordon Knoble	288-3687			Chris Garman	288-6383	DCN-001 complete	Mar-94	54	0		0	0	0	
5 IRD between EDOS and the ETS	500-EDOS-0211.0009	On Hold	Gordon Knoble	288-3687			Willie Fuller		DCN-003 complete	Apr-95	7	0		0	0	0	
6 Data Format Requirements Document	500-EDOS-0230.0001		Gordon Knoble	288-3687						Dec-92							
EDOS IRD TOTALS											274	0		0	0	0	
1 EBnet IRD	C&C/SD-92/8146	505-41-31	Steve Smith	288-7338													
Other IRDs																	
1 IRD between ESDIS and NSI	TBD		R. Duda	(415) 804-0047	Andy Garman	572-1254											
2 IRD between NASANAEDA and EOS	TBD				Andy Garman	572-1254											
3 IRD between P&CN and ECS	194-219-8E1-008	505-41-32	Dick desJardins	288-8854	K. Annambhotla	(206) 544-6040			On Hold	Feb-95							
4 AIM-1 Detailed Mission Requirements	Omission	none	Angie Kelly	288-7726	Greg Einfall	474-1700	NIS& and AM-1		Prelim. Complete	Jul-94	168	0		133	4	6	0
Other IRD TOTALS											168	0		133	4	6	0
Note-1: The Current Date column refers to the most recent revision of the document available. All data came from this version of the document.																	

Figure C-4. Example of ESDIS IRD Listing (2 of 2)

Document Title	Originators #	ESDIS #	Book Boss	Phone	Author(s)	Phone	Interfacing Organization	Phone	Current Status	Current Date	Issues	Blank	TBDs	TBRs	TECs	TECs
1 ICD between ECS and the Version O System	Hughes 209-CD-011-001		Greg Huncolt	288-0663	Carol Chachulski	925-0661	DAAc David Han	288-6622	CCR-188 Complete	Mar-95	0		10	1	8	0
2 ICD between ECS and SCFs	Hughes 209-CD-005-001		Stan Scott	288-8817	Stan West	925-0770	NA		Prelim.	1/28/95	0		14	2	12	0
3 ICD between ECS and the NSI	Hughes 209-CD-001-001		Dirk desJardins	288-8654	Dean Moore	925-0439	NA		Prelim.	2/28/95	0		5	0	0	0
4 ICD between Landsat-7 and ECS (for LP8)	Hughes 209-CD-003-001		Ted Ackerson	288-3208	Mary Armstrong	925-0638	Joy Henager Les Wentz		Complete	7/15/95						
(for MOC, IAS, LP8, and MOC)			Ted Ackerson	288-3208	Betsy Harsch	925-0638	Derrel Williams Jim Itons									
5 ICD between ECS and ASTER SRS	Hughes 209-CD-002-001		Matt Schwallier	288-0623	Betsy Harsch	925-0638	MITI		Prelim.	2/1/96			11	22	36	0
6 ICD between ECS and TSDS (TRIM)	Hughes 209-CD-007-001		Ted Ackerson	288-3208	Carol Chachulski	925-0661	Hiroshi Watanabe		Complete	11/23/94	7		19	26	0	0
7 ICD between ECS and NOAA ADC	Hughes 209-CD-006-001		Matt Schwallier	288-0623	Debbie Foch	925-0777	Erin Stocker	288-2153	Prelim.	11/27/95	0					
8 ICD between ECS and P8CN	TBD		Dirk desJardins	288-8654	Rogard Ross				Complete	3/3/95						
9 ICD between ECS and SDVF (AM-1)	Hughes 209-CD-012	none	Angie Kelly	288-7726	Mary Armstrong	925-0439	AM-1		Complete							
10 ICD between ECS and SAS	Hughes 209-CD-003-001		Angie Kelly	288-7726	Carol Chachulski	925-0661	Ed Chang	288-6664	Rel. B not written	11/23/94	1		1	0	2	0
11 DFCD for the EOS AM-1 Project Data Base	Hughes 209-CD-004-001		Angie Kelly	288-7726	Carol Chachulski	925-0661	AM-1	288-6664	Complete							
12 ICD between ECS and EDC VO DAAC	TBD		Angie Kelly	288-7726	Carol Lloyd	925-0638	Ed Chang	288-6664	Prelim.	11/23/94	5		5	1	1	0
13 ICD between ECS and LaRC VO DAAC	TBD		Greg Huncolt	288-0663	TBD				Complete							
14 ICD between ECS and the GSFC DAAC	TBD		Greg Huncolt	288-0663	William Singleton	925-0665			Complete							
15 ICD between ECS and the MSFC DAAC	Hughes 209-CD-009-001		Greg Huncolt	288-0663	William Singleton	925-0665			Prelim.	1/27/95	0		2	0	5	0
16 ICD between ECS and ORNL VO DAAC	Hughes 209-CD-009-001		Greg Huncolt	288-0663	William Singleton	925-0665			Complete	1/27/95	0		3	3	10	0
17 ICD between ECS and ASF VO DAAC	TBD		Greg Huncolt	288-0663	TBD				Rel. B not written							
18 ICD between ECS and JPL VO DAAC	TBD		Greg Huncolt	288-0663	TBD				Rel. B not written							
19 ICD between ECS and NSDC VO DAAC	TBD		Greg Huncolt	288-0663	TBD				Rel. B not written							
20 ICD between ECS and SEDAC VO DAAC	TBD		Greg Huncolt	288-0663	TBD				Rel. B not written							
ECS ICD TOTALS			Greg Huncolt	288-0663	TBD				written		13		70	66	74	0

Note-1: The Current Date column refers to the most recent revision of the document available. All data came from this version of the document.

Figure C-5. Example of ESDIS ICD Listing (1 of 3)

Document Title	Originators #	ESDIS #	Book Boss	Phone	Author(s)	Phone	Interfacing Organization	Phone	Current Status	Current Date	Issues	Blank	TBDs	TBRs	TBSs	TBCs
EDOS ICDs																
1 ICD between EDOS and EGS	TBD		Gordon Knoble	286-3687	William LaChance	507-5874	Local	507-5874	Not Written							
2 ICD between EDOS and NCCDS	TBD		Gordon Knoble	286-3687	David Moore	507-5883	Roger Clason	507-5883	Not Written							
3 ICD between EDOS and T&T	TBD		Gordon Knoble	286-3687	Fred Beckmann	507-5876	David Littmann	507-5876	Not Written							
4 ICD between EDOS and EBnet	TBD		Gordon Knoble	286-3687	Ken Mason	507-5920	Chris Garman	507-5920	Not Written							
5 ICD between EDOS and ETS	TBD		Gordon Knoble	286-3687	Ken Mason	507-5920	Wille Fuller	507-5920	Not Written							
6 ICD between EDOS and NOAA	TBD		Gordon Knoble	286-3687	Fred Beckman	507-5876			Not Written							
7 ICD between EDOS and ASTER GDS	TBD		Gordon Knoble	286-3687	William LaChance	507-5874			Draft							
EDOS ICD TOTALS									Complete	5/1/85						
EBnet ICDs																
1 ICD between EBnet and EOC	540-041		Chris Garman	286-6383	Rick Oravel	805-3710	Mike Rackley	286-2220	Prelim. In work		1		3			
2 ICD between EBnet and FDF	540-034		Chris Garman	286-6383	Rick Oravel	805-3710	Vicki Pendergast	286-8022	Prelim. Complete							
3 ICD between EBnet and MSS	540-033		Chris Garman	286-6383	Rick Oravel	805-3710			Ecom Complete							
4 ICD between EBnet and LPF (NAFB)	540-043		Chris Garman	286-6383	Rick Oravel	805-3710	Ming Lee	(806) 734-9232	Complete							
5 ICD between EBnet and SCJTF	540-038		Chris Garman	286-6383	Rick Oravel	805-3710	Jacques Lorivet	(610) 364-2581	Not Written							
6 ICD between EBnet and ETS	540-038		Chris Garman	286-6383	Rick Oravel	805-3710			Prelim. Complete							
7 ICD between EBnet and DARC	Future		Chris Garman	286-6383	Rick Oravel	805-3710	Sid Ambadar	925-0407	Not Written							
EBnet ICD TOTALS											1		3			

Note-1: The Current Date column refers to the most recent revision of the document available. All data came from this version of the document.

**Figure C-5. Example of ESDIS ICD Listing (2 of 3)**

Document Title	Originators #	ESDIS #	Book Base	Phase	Author(s)	Phase	Interfiling Organization	Phase	Current Status	Current Date	Issues	TBDs	TBRs	TBSs	TBCs
1 ICD-400-A1 for JPL-158C for Mission using DSM A	100182 Appendix A		Game Smith	286-			APL/55K Lovers	Ed	Final	Dec-94					
2 ICD-400-A1 from H0050 to WOTS	513-01-10-0192		Game Smith	286-					Complete	Dec-94					
3 ICD-400-A1 from H0050 to DSM	Future		Game Smith	286-			Dick Schenckler	286-7919	Complete	Dec-94					
4 ICD between H0050 and DSM	TR0		Game Smith	286-					Net Written	Apr-95					
5 ICD between FIF and EDS 100 (APF-1)	TR0		Game Smith	286-	Jim Garrick	286-5474			Complete						
6 ICD between FIF and EDS 100 (APF-1)	Future		Game Smith	286-	Jim Garrick	286-5474			Net Written						
7 ICD between EDS and EDS 100 (APF-1)	Lock-Harris	None	Angie Kella	286-	Angie Kella	286-7726	APF-1 Chang	Ed	Complete	Feb-95					
8 Data Format Control Book (APF-1)	ICD-106	NA	Ed Chang	286-					Complete	Apr-94					
9 ICD for APF-1 / STOM RF	ICD-104		Ed Chang	286-					Complete	Jan-95					
10 ICD for APF-1 / WOTS RF	TR0		Ed Chang	286-					Complete	Jan-95					
11 ICD between EDS and EDS 100 (APF-1)	ICD-107	NA	Ed Chang	286-					Complete	Mar-94					
12 ICD between EDS and EDS 100 (APF-1)	560-203.103		Tom Anderson	286-	Greg Heagy	286-7847	Greg Heagy	286-7847	Complete	Feb-95	0	6	3	18	0
Other ICD TOTALS											0	6	3	18	0

Note-1: The Current Date column refers to the most recent revision of the document available. All data came from this version of the document. Status noted as "a"

Figure C-5. Example of ESDIS ICD Listing (3 of 3)



Interfaces	Originator Schedule Status	ESDIS Schedule Status	I/F Org. Schedule Status	Book Boss Assessment
ECS/Version 0	GREEN	RED	RED	YELLOW
ECS/SCFs	GREEN	GREEN	NA	GREEN
ECS/NSI	YELLOW	GREEN	GREEN	YELLOW
ECS/ADC	GREEN	GREEN	GREEN	GREEN
ECS/NISS	GREEN	GREEN	NA	GREEN
ECS/TRMM	GREEN	GREEN	GREEN	GREEN
ECS/MITI	GREEN	YELLOW	GREEN	RED
ECS/EOS-AM-1	GREEN	GREEN	GREEN	
ECS/Landsat 7	GREEN	RED	GREEN	YELLOW
ECS/ADEOS II				
SAGE-III				
ECS Comm. Reqs.	GREEN			YELLOW
EDOS/EOS EOS	GREEN	YELLOW	ECS - YELLOW MITI - YELLOW NOAA - YELLOW	GREEN
EDOS/NCCDS	RED	YELLOW	YELLOW	YELLOW
EDOS/TOT	RED	YELLOW	YELLOW	YELLOW
EDOS/Ecom	GREEN	YELLOW	YELLOW	YELLOW
EDOS/ETS	GREEN	YELLOW	YELLOW	YELLOW
DFRD				YELLOW
Ecom				YELLOW
ESDIS/NSI				YELLOW
NASA/NASDA				
ECS/PSCN	RED			YELLOW
EOS-AM1/DMR	GREEN	GREEN	GREEN	
	Key: WHITE - No Assessment GREEN - Approved YELLOW - Less than 30 days late RED - More than 30 days late			Key: W - No Input G - No Problem Y - Workable Problem R - Critical Problem

**Figure C-6. Example of ICWG IRD Criticality Matrix**

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## Abbreviations and Acronyms

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ACRIM	Active Cavity Radiometer Irradiance Monitor
ADC	affiliated data center
ADEOS	Advanced Earth Observing Satellite
ARDB	Automated Requirements Database
ASTER	Advanced Spaceborne Thermal Emission and Reflection Radiometer
BOF	beginning of file
BOT	beginning of tape
CADU	Channel Access Data Unit
CCB	Configuration Control Board
CCR	configuration change request
CERES	Clouds and Earth's Radiant Energy System
CHEM	Chemistry Mission
CLCW	Command Link Control Word
CLTU	Command Link Transmission Unit
CM	configuration management
CMO	Configuration Management Office
COLOR	Ocean Color
CRC	cyclic redundancy check
CSA	Canadian Space Agency
CSMS	Communications and System Management Segment
DAAC	Distributed Active Archive Center
DAS	Direct Access System (AM-1)
DCN	document change notice
DFCD	Data Format Control Document
DIF	Data Interface Facility (EDOS)
DMR	detailed mission requirements
DSN	Deep Space Network
EBnet	EOSDIS Backbone Network
Original	AB-1

Ecom	EOS Communications (superseded by EBnet)
ECS	EOSDIS Core System
EDOS	EOS Data and Operations System
EGS	EOS Ground System
EOC	EOS Operations Center
EOF	end of file
EOS	Earth Observing System
EOSDIS	EOS Data and Information System
EOT	end of tape
ESA	European Space Agency
ESDIS	Earth Science Data and Information System
ESN	EOS Science Network
ETS	EOSDIS Test System
F&PRS	functional and performance requirements specification
FDF	Flight Dynamics Facility
FOO	Flight of Opportunity
FOS	Flight Operations Segment
GN	Ground Network
GSFC	Goddard Space Flight Center
IADB	Interface Analysis Database
ICC	Instrument Control Center
ICD	Interface Control Document
ICP	Interface Control Plan
ICWG	Interface Control Working Group
IPA	interproject agreement
IRD	Interface Requirements Document
IST	Instrument Support Toolkit (ECS)
IV&V	independent verification and validation
IVVP	Independent Verification and Validation Plan
JPL	Jet Propulsion Laboratory
LAN	Local Area Network

LaRC	Langley Research Center
LIS	Lightning Imaging Sensor
MAN	Metropolitan Area Network
MIMR	Multifrequency Imaging Microwave Radiometer
MITI	Ministry of International Trade and Industry
MOPITT	Measurement of Pollution in the Troposphere
MOU	memorandum of understanding
MRR	mission requirements response
NASA	National Aeronautics and Space Administration
Nascom	NASA Communications
NASDA	National Space Development Agency of Japan
NCC	Network Control Center
NISS	NASA Institutional (Operations) Support Systems
NOAA	National Oceanic and Atmospheric Administration
NSI	NASA Science Internet
PDMP	project data management plan
PSCN	Program Support Communication Network
RF	radio frequency
RID	review item disposition
SAGE III	Stratospheric Aerosol and Gas Experiment III
SCF	Science Computing Facility
SCITF	Spacecraft Integration and Test Facility
SDPF	Sensor Data Processing Facility
SDPS	Science Data Processing Segment (ECS)
SDR	System Design Review
SISS	Science Information Systems Segment
SN	Space Network
SOLSTICE	Solar/Stellar Irradiance Comparison Experiment
SOW	statement of work
SRR	System Requirements Review
TBD	to be determined

TBR	to be resolved
TCP/IP	transmission control protocol/ internet protocol
TDRSS	Tracking and Data Relay Satellite System
TGT	TDRSS Ground Terminals
TONS	TDRS Onboard Navigation System
TRMM	Tropical Rainfall Measuring Mission
TSDIS	TRMM Science and Data Information System
WAN	Wide Area Network
WOTS	Wallops Orbital Tracking Station

